

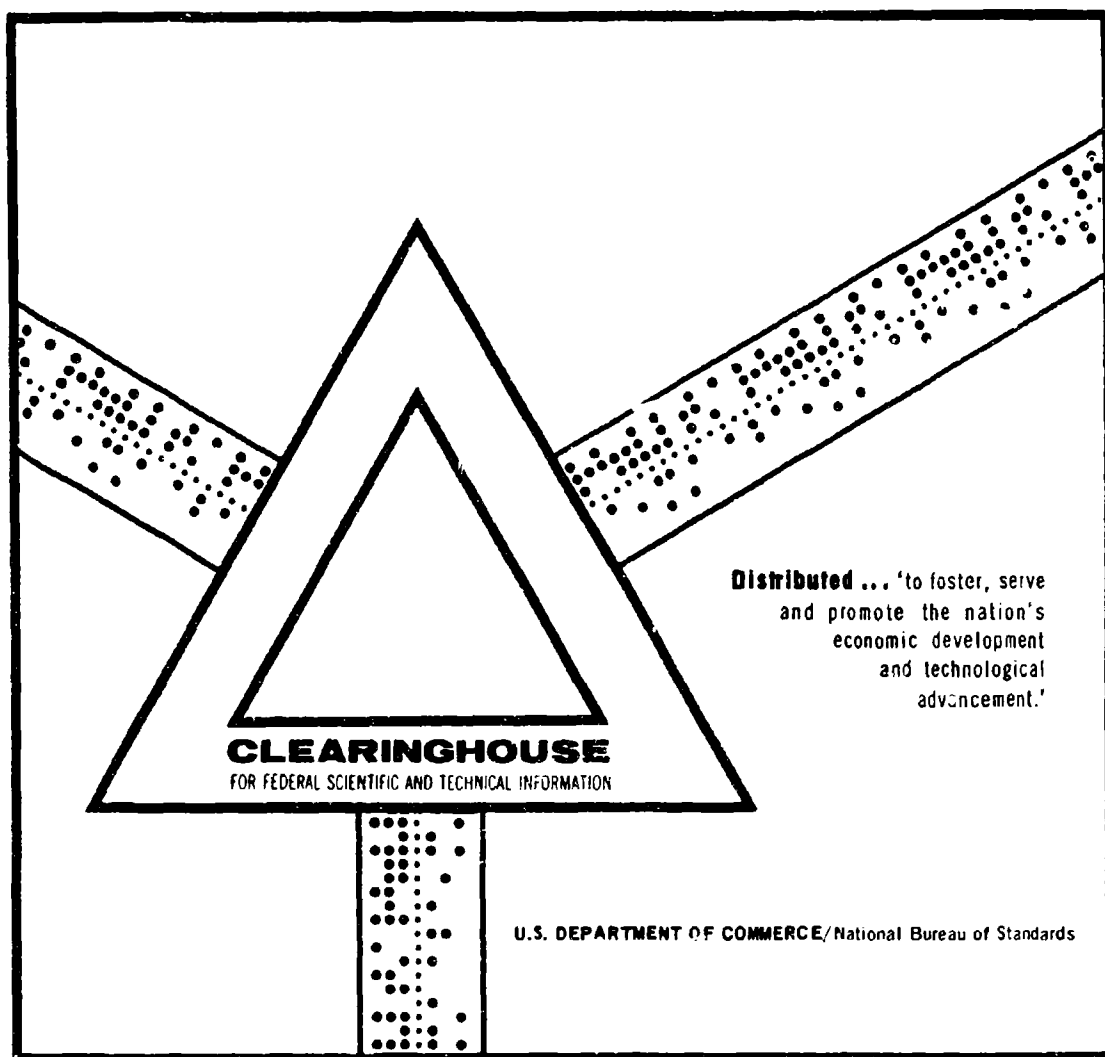
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A MAJOR SOCIAL INVENTION**

Roger E. Levien

Rand Corporation  
Santa Monica, California

November 1969



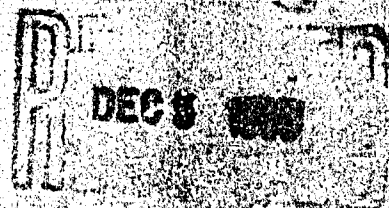
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INDEPENDENT PUBLIC POLICY ANALYSIS ORGANIZATIONS--

A MAJOR SOCIAL INVENTION

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The years since the end of World War II have witnessed the birth and development of a widely noted, but poorly understood, social invention of major importance: the independent public policy analysis organization.

The Rand Corporation, the Institute for Defense Analyses, the Research Analysis Corporation, The MITRE Corporation, and--to some extent--the Aerospace Corporation have been the subject of widespread discussion in the news media, the houses of Congress, and the academic world; but this discussion has invariably characterized these institutions as "think tanks," "defense systems engineering firms," "long-range, futures-oriented research institutes," or--in company with universities, churches, and foundations--as "not-for-profits."

The thesis of this paper is that the truly distinguishing characteristic of these organizations, the one that makes them instances of an important public invention, is not their ivory-tower intellectual qualities, nor their association with complex military hardware development decisions, nor their concern with problems lying beyond the present, nor even their lack of stockholders and corporate profit-motivation; what makes them worthy of notice, and widespread emulation, is their role as independent organizations that provide analytic assistance to government agencies in the resolution of public policy issues.

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The further thesis of this paper is that in a period in which the complexity of public policy issues and public institutions has grown beyond the competence of traditional mechanisms, in which the rate of social change shows little chance of decreasing, and in which new knowledge of the subjects and methodology of public policy-making is developing in many disciplines, there is a need for new institutions to provide all levels of government with the technical and analytic competence essential to adequate public policy-making; and the prototype for these new institutions has already been devised to help with the complex public issues faced by national security decisionmakers during the last twenty-five years.

The final thesis of this paper, then, is that in order to meet the demands of contemporary public policy-making, a major societal innovation, which had its origins in service to national security policy-making--the independent public policy analysis organization--should be brought to the service of all levels of government--local, state, and federal--and all categories of public policy issue--including education, public safety, health, transportation, housing, and welfare.

These theses rest on three propositions.

First, that government is indeed in need of additional analytic assistance in coping with current and future public policy issues. Evidence in support of this proposition is so much a part of the public awareness that no attempt to further buttress it will be made here. It shall be taken as given.

Second, that among the forms of analytic assistance most needed by government is one that can only be produced in an environment that combines concern for policy issues with influence and independence, a broad study charter, a multidisciplinary staff, a view of the future, and a systems approach.

And third, that this form of assistance cannot be provided by the conventional institutions--government itself, the universities, or private industry--but only by independent policy analysis institutions.

The evidence in support of these propositions will be discussed in the remainder of this paper.

### ENVIRONMENTS FOR PUBLIC POLICY ANALYSIS

The problems that government faces cover a broad spectrum of complexity. At one end are those that concern a matter that has recurred regularly over a long period in a well-understood environment, and involve choice among a small number of known alternatives of roughly similar and high effectiveness. At the other end are those that deal with an issue that is entirely new in a rapidly changing environment, and involve choice among a large number of poorly defined alternatives of widely differing, mostly low effectiveness.

For issues that lie toward the simpler end of the spectrum, most agencies have developed adequate internal analysis mechanisms. The issues are generally well specified. The data needed to decide the issues have been identified over the years and mechanisms to collect them regularly have been developed. The procedures necessary to analyze the data have also been built into the institutions of decision. Those specialists whose skills must be used in making or implementing decisions are on the staff and specialized outside consultants and contractors are regularly assigned well-defined tasks beyond the capacity of the government staff. Frequently, universities and colleges have developed programs to provide the specialists needed by these agencies. Faculty members may provide specialized consulting services. The highway departments of most states have functioned in this manner over the years, as have most school systems and departments of public health.

The effect of rapid social, political, economic, and technological changes in society, however, has been to shift the distribution of issues faced by almost all public agencies toward the complex end of the spectrum. For these complex issues, few agencies have developed adequate internal analysis mechanisms. Nor is it likely that they might. For the problems cannot be well defined; the data needed for decision are usually unknown and generally uncollected; the proper analytic procedures have not been developed; a wide range of discipline specialists is frequently needed to analyze the social, economic, and political aspects of the issue; and the tasks to be assigned to outside specialists usually cannot be precisely specified. And the universities and colleges cannot develop programs to produce the needed specialists

until a body of teachable techniques have been produced in practice. The issues posed by environmental pollution, education of the poor and discriminated-against, urban transportation, and delivery of health care are among those that lie close to this end of the spectrum.

Help in resolution of this class of issues must come, therefore, from outside the agencies themselves. But what characteristics must the right institution have? Policy-orientation, influence, breadth-of-charter, interdisciplinary character, an eye to the future, and a concern with systems are among the most important.

#### Policy-orientation

While it may seem a truism to state that an institution intended to assist government policy-making must be policy-oriented, the statement warrants making and discussing for two reasons.

First, the precise meaning of the statement is that the fundamental orientation of the institution must be toward the production of policy-relevant studies. Policy-orientation should not be appended to a higher-priority concern for the production of publishable scientific research, or for the production of profitable products, or for the training of students. Management and staff members should perceive the need for, be motivated toward, and receive rewards for the production of policy-relevant research and those studies that support it. This condition is essential because the importance to society of a specific policy study will frequently be unrelated to its intellectual challenge, profit-making potential, or educational benefit. Unless those who are to conduct such studies and their superiors are motivated above all by the prospects of public benefit, and not primarily by professional or disciplinary rewards, corporate profit, or pedagogic values, the full social benefit from outside assistance to government is unlikely to be achieved. Unless the institution's principal motivation is the production of policy-relevant research, it may choose not to work on problems of policy relevance if intellectual, financial, or educational interest is lacking; it may focus on inappropriate techniques or technologies of solution because of institutional or individual interests; and it may find it difficult to provide a full range of appropriate staff skills.

As an example, consider the problems faced by a big-city fire department. If a university engineering school were asked to help the department, the natural motivation of the professors and their graduate students would be to find and solve problems that provided enough intellectual challenge to warrant publication of their solution in the professional literature. The creation of new knowledge and its dissemination is, after all, a primary objective of the university and a major means of advancement in the academic profession. If a computer firm were asked to help the department, its natural inclination would be to find ways in which the computer could be used by the department, without devoting too much attention to alternative means of carrying out the same task. And if a management consulting firm were to take on the job, it would be inclined to apply those techniques and skills that it already had in its grasp and for which it had the staff. But those skills and staff would be limited in two ways: by analytical competence, which in such firms is ordinarily not as broad or deep as in a good research organization, and by motivation, which in such firms is to employ consulting time to greatest profit. These limitations might not matter at the less complex end of the public policy issue spectrum; they would cause severe difficulties at the other end of the issue spectrum, where new techniques, a wide variety of skills, and high research competence are needed.

The second reason for explicitly stating the self-evident need for policy-oriented activities is to draw attention to the less evident, but equally important, need for strong complementary activities that are not directly policy-relevant. The institution's research program must include supporting basic and background research in the sciences, technologies, and methodologies that affect public policy issues or their analysis. Indeed, on the basis of Rand's experience, a proper balance probably has no more than one-half of the institution's research program devoted directly to policy issues; the remaining half should be divided among science, technology, and methodology studies. But these non-policy studies must be developed with the needs of policy research in mind. They are carried on not solely for their own value. Rather, they are there to establish the intellectual capital on which policy

research is based. The specialists in materials and structures are resources that the analyst studying new methods of housing production or urban transportation or fire protection draws upon. But those specialists, if they are to be attracted to work at the institution in the first place and if they are to be a source of up-to-date information on the state of their professions, must be encouraged to work at the frontiers of their disciplines a substantial portion of their time. This establishes one need for basic and background research. Moreover, as policy research proceeds there often develop problems of science, technology, or methodology that have not previously been solved. Often these have to be bypassed during the study in question, but if progress is to be made in the long run, they must be taken under investigation and solved. Thus, a portion of the supporting research should be devoted to issues that arise often in policy-relevant studies. One example is the work that has been under way at The Rand Corporation for a number of years on the problem of using expert judgments as part of policy studies. There are often instances during such studies when concrete data about a subject are lacking, yet experts in that subject may be expected to provide estimates and judgments better than a novice's. The problem has been how to gather and combine such expert data without introducing distortions as a result of dominant personalities, irrelevant communications, and group pressure toward conformity. One approach to solution has been a new technique, called the Delphi method, which has proven useful in some studies and whose strengths and limitations are still being surveyed. Delphi incorporates anonymous response via questionnaire, iteration of questionnaires with controlled feedback of data from previous rounds, and statistical aggregation of individual responses to achieve group responses.

Thus, while the fundamental concern of the institution must be the production of policy-relevant research, its effectiveness depends on its also devoting a substantial portion of its effort to basic and background research in science, technology, and methodology.



### Influence

The second essential characteristic of an organization seeking to serve government policy-makers is influence. And again, this apparent truism warrants noting, since its consequences are not always directly observed. Two of these consequences are crucial.

The first is the need for continuity, an association with government that extends over a number of years, rather than the span of a single task-order contract.

From such continuity comes the knowledge on which influence depends. Good policy research is based not only on the general knowledge and skills of the analyst, but equally on his awareness of the specific characteristics of the agency he is working with and its problems. Often this is information that has never been captured in written form or that sharply modifies what is in "the book." Frequently it is the understanding of realities, constraints, attitudes, personalities, and politics that can only be gained first-hand and over time. Without continuity of association between the policy analysis organization and its government client, analysis is likely to suffer from naivete or irrelevance.

Continuity also is the precondition for a second constituent of influence: trust. Outside specialists who arrive, spend six months or a year examining the problems of an agency, find inefficiencies or other difficulties, report them to a superior, make unimplementable suggestions for change, and then depart have, understandably, made government officials suspicious of studies undertaken by outsiders. To overcome those suspicions and achieve the trust and influence on which effective policy research depends demands a long-term commitment on the part of the policy analyst. He must stay long enough to truly know the agency; must be there when his suggestions are implemented so as to modify them, if necessary, and to share the blame or credit; and must deal on a day-to-day basis with those who must implement his suggestions so they understand their meaning and purpose.

The second consequence of the need for influence is the complementary need for independence. One way of achieving influence within an agency, of course, is to adopt fully the constraints, modes of

thought, and ideas of the agency; to become an almost indistinguishable part of it. The solution to many current public policy issues, however, is likely to require the loosening of previous constraints, the introduction of different modes of thought, and the encouragement of new ideas. To be able to think about "unthinkable" or "forbidden" topics; to be able to reject received institutional dogma; and to be believed by independent outside observers, the policy analysis organization must complement its influence with independence. Indeed maintaining a proper balance between these complementary and competitive qualities is one of the most difficult tasks that independent policy analysis organizations face. Too much independence and their influence with agencies can be severely reduced; too little independence and their quality and authority can be severely reduced.

#### Breadth of Charter

The third essential characteristic of an effective independent policy analysis organization is that it have a broad charter. Its contracts should, in general, encourage it to examine the full range of subjects consonant with the responsibilities of the contracting agencies, rather than narrow prespecified tasks. And the choice of specific topics should reside primarily with the policy analysis organization, rather than the contracting agency.

These conditions, so obviously to the benefit of the analysis organization, are of equal importance to the contracting agency, although they contradict natural governmental desires to prespecify and control any tasks requiring the expenditures of public funds. Their importance derives from the nature of good public policy analysis, which much more resembles scientific research than it does the procurement of the usual goods and services. Solutions to fundamental problems of education and health care delivery and environmental quality and public services can no more be ordered up on schedule, at the present state of our knowledge, than can solutions to fundamental problems of psychology, biology, physics, or mathematics. Instead, government agencies should commit themselves to supporting a certain level of effort in policy analysis, as they do with scientific research, in the knowledge that from that

effort will come results justifying the expenditure, even though their nature cannot be known in advance. Reciprocally, of course, policy analysis organizations must recognize their responsibility to develop a program of research that produces results of substantial benefit to the contracting agency. And, in fact, if those results are not satisfactory, the government agency is unlikely to renew its contract. Thus, a broad charter need not threaten the reputation for fiscal responsibility of the contracting agency.

The broad charter, however, does not mean that the analysis organization will or should work on the agency's most general problems or even on all of its problems. As a general rule, most policy analysis will address specific, rather narrow, problems; for detailed understanding of the pieces most generally precede broader studies. And, at the present state of our knowledge, there can be large payoffs from improving the performance of small pieces of larger systems. What the broad charter provides is the aegis under which policy analysts may strike at targets of opportunity, may decide for themselves on the basis of their first-hand acquaintance with the available tools and the spectrum of problems, which ones are likely to yield. It also provides the most important freedom of all for good analysis: the ability to pursue a problem where it leads, rather than where it is supposed to lead. Experience at Rand is instructive here. One of the most effective studies ever done at Rand, one which the Air Force believes saved over a billion dollars, was a study that began as an investigation of logistic support for a prospective system of overseas air bases. In addressing this problem, however, the analysts felt that they should also consider the purposes to which the bases were to be put and alternative ways of achieving those purposes. This was a significant broadening of their original charter, but it led them to do a study that concluded that the prospective overseas basing system was not the best way to achieve the Nation's objectives. A different basing system, primarily within the Continental United States, would be better and one billion dollars cheaper. From this study also came some of the fundamental concepts of strategic force design that have guided the development of our inter-continental forces ever since. Had the study been done under a specific

task-order contract to study logistics systems for overseas bases, it very likely would have culminated in such a system instead.

#### Interdisciplinary Character

The policy issues faced by most government agencies fall even less frequently than in the past into the domains of single academic disciplines. Even in the areas that have conventionally been the province of the engineers, such as transportation or environmental quality, or of the economists, such as taxation and finance, or of the social scientists, such as welfare and education, there is growing recognition that insights, methods, and lessons from other disciplines must be brought to bear if improved public policy decisions are to be taken. Public policy analysis institutions must, therefore, be able to mobilize the highest skills of people trained in a wide range of disciplines, from engineering to sociology, from computer science to medicine.

Each of the successful policy analysis institutions has recognized and operated according to these principles. Rand, for example, has ten departments, which follow--for the most part--the definitions of conventional academic departments: Physics, Mathematics, Engineering Sciences, Environmental Sciences, Economics, Computer Sciences, Management Sciences, Social Science, Resource Analysis, and System Sciences. But Rand's policy analyses are invariably conducted by teams comprising individuals from several such departments. These interdisciplinary teams are the major tool of public policy analysis. The discipline-oriented departments are the means of recruiting, evaluating, encouraging, and rewarding the high-quality specialists whose individual skills contribute to the success of the interdisciplinary team.

Rand's experience suggests that this dual staff organization--interdisciplinary study teams and discipline-oriented departments--is essential to long-term organizational success. The alternative organization into problem-oriented departments--transportation studies, health studies, housing studies, and so on--is not so successful in attracting first-class specialists, who are best recognized and rewarded by their peers and who ordinarily crave their colleagues' company; nor so flexible in responding to the variety of interdisciplinary team

structures required even within a single problem area; nor so able to benefit from the common occurrence of certain subproblems, such as information system design or service facility location, in several, otherwise distinct, problem areas.

True interdisciplinary studies are rare, for they demand the intricate merging of insights and methods from the several contributing disciplines into a study that responds directly and thoroughly to the policy issue under examination. The threads of the several disciplines should be so tightly meshed and interwoven that they form a smooth and continuous fabric of argument. What generally passes for interdisciplinary research more nearly resembles a patchwork quilt, often with gaping holes. It might, more accurately, be called multidisciplinary research. In such instances, each discipline specialist studies the problem from his own point of view and the resultant appreciations are loosely stitched together. Still a third kind of research, often confused with interdisciplinary research, is adisciplinary research. Here, while several different discipline specialists are involved, close examination shows that few of them are employing knowledge or techniques specific to their disciplines. Their participation in the study, rather, is as generally intelligent, experienced problem-solvers. Such research is important and frequently valuable, especially in studying new or unusual problems and in producing new problem approaches; but it is not interdisciplinary research. The final type of study that is often confused with interdisciplinary research is crossdisciplinary research. This is research in the subject areas, such as biophysics and engineering economics, that lie at the boundaries of two traditional disciplines. Often, these subjects have developed a core of knowledge and technique that can be conveyed to students to produce specialists in the crossdisciplines. The combination of disciplines, then, occurs naturally in the mind of the crosstrained researcher. Problems of research organization are far less critical in multidisciplinary, adisciplinary, and crossdisciplinary research than they are in true interdisciplinary research. There are four preconditions for the success of such research: the right problem, the proper leader, appropriate methodology, and adequate incentives.

Without the right problem statement interdisciplinary research may never have the chance to get done. If the problem is to design the least expensive freeway route from A to B through a city, the study team will consist of highway engineers almost exclusively. If the problem is to design the freeway so as to achieve some balance among social, economic, political, cultural, and esthetic costs, the study team will have to include sociologists, economists, architects, and city planners also. And if the problem is to improve urban transportation between A and B, then other engineering specialties and additional social and political skills must be employed.

The most important single factor in achieving true interdisciplinary research, in Rand's experience, is the quality of the project leader. To be effective, such a person should combine a fundamental concern with the policy problem, recognized excellence in some single discipline, and a solid understanding of the achievements, approaches, and vocabulary of several other relevant disciplines. His concern for the policy problem enables him to focus the research of others and judge its relevance. His own depth in a discipline brings him the respect of those with whom he works (and the concomitant intellectual authority) and usually is accompanied by a well-developed and generalized scientific taste that helps him to judge the quality of other research, even when it is not in his own discipline. And his knowledgeable appreciation of other disciplines helps him to specify the subproblems on which he wishes assistance and to judge what he can expect to have done. This combination of policy orientation, depth, and breadth is, and always will be, rare. Its rarity limits the development of good interdisciplinary research.

One way of amplifying the always limited ability of leaders to draw together a mixed discipline team is through the use of appropriate methodology. At Rand, the use of manual military gaming in the study of national security issues often had as one of its greatest benefits the bringing together of social scientists, physical scientists, engineers, and economists to focus, in a structured way, on policy issues. Similar effects may be obtained by turning the attention of such mixed teams to the construction of mathematical or computational models.

Each of the previously described prerequisites for effective interdisciplinary research will fail unless a final condition is satisfied. The institutional framework in which research is conducted must provide the proper financial and professional incentives and rewards for achievements in interdisciplinary research. Two realities hamper the realization of this seemingly self-evident condition. First, since interdisciplinary research is necessarily team research, individual contributions can be submerged to the point of invisibility. Conscious attempts must be made by research administrators to identify and reward the value of each researcher's participation in a joint effort, even when it is not a single factorable piece. Second, since professional rewards are frequently associated with a person's discipline, as is his mobility to other jobs, participation in true interdisciplinary research must overcome an incentive system that is not under the control of any single institution. Once again, research administration must try to balance a researcher's need for recognition in his profession against the need for almost anonymous performance in an interdisciplinary team. This can be done by encouraging mixed research activities by staff members, some purely discipline-oriented, others problem-oriented.

#### Futures-orientation

The effects of public policy decisions taken today are reaped for many years into the future. Public policy analysis, therefore, must look to the future to seek the context in which to examine many of today's issues. At the same time, our ability to anticipate consequences in the future is limited, and rooted in our understanding of the present. The result, therefore, is that a balanced program of public policy analyses, if Rand's experience is used for guidance, comprises activities whose time reference ranges from the present to twenty or more years into the future, with most activity concentrated on the immediate future, some on the mid-range, and a few studies looking even further ahead.

If looking into the future, the need for interdisciplinary research becomes even more evident. The seemingly direct problem of estimating the state of development of some single technology a decade or more into the future requires economic, social, and even political insights if it is to be done well. For what determines the rate of development and introduction of some new technology is frequently the economic, social, and institutional context in which it is applied, rather than the internal logic of the technology itself. The rate of growth of computer-assisted instruction, for instance, is not likely to be paced by technological developments, which already almost suffice for many applications, but rather by the development of institutional and professional incentive for the development and use of such materials, and market mechanisms for their dissemination.

#### Systems Approach

The final essential characteristic of an effective public policy analysis organization is a concern with the whole and not just with the parts of a problem. Thus, if the problem is with crime, effective policy analysis must eventually consider the interrelated activities of the several public agencies that affect crime and criminals--the police, courts, and corrections department. And if the concern is with improving police effectiveness, good policy analysis must consider the interactive effects of additional technology, better training, and improved procedures. The systems approach, therefore, consists in nothing more than the common-sense observation that in investigating a problem, one should examine all those agencies and modalities whose actions affect it. The only reason this observation warrants frequent repetition is that it is so often and so casually overlooked.

The structure of government agencies inhibits the appropriate application of the systems viewpoint to public decision-making. Public policy analysis is likely to be carried out for an agency that is only part of the larger system. The problem of crime must be examined under contract to the police department, for example, rather than for the several criminal-justice agencies. This distinctly limits the access to data and individuals, the range of alternatives considered, and the scope of



suggestions made. One prerequisite, therefore, for successful application of the systems approach to public issues is the existence of public agencies whose authority includes the relevant systems. Short of that, study efforts might be sponsored by groups of agencies, by high-level advisory committees, or by outside private or federal funds.

The second major inhibition to effective system studies of public policies is ignorance. For many of the critical public systems, we know little even about the primitive constituents of the system--the value of patrol cars, the performance of detectives, the proper role for prisons, or the causes of recidivism, for example. Without solid understanding of the bricks, the larger edifice cannot be satisfactorily designed. Thus, despite a preference for studies that face the issues comprehensively, much public policy analysis must concern itself with more narrowly delimited, less tenuous objects of study that are only subsystems of the larger system.

Of course, it is rarely the case that one can isolate the system whose design is paramount. Almost always, each system belongs to many other, even more comprehensive systems. Raising the performance of one of the subsystems to its highest peak, moreover, does not always, or even usually, add as much as possible to the performance of the larger systems. Such suboptimization is generally, however, the best that can be done; and, quite usually, it is sufficient.

Thus, the systems approach is a mode of thought and an ambition, whose achievement is limited by the realities of divided authority and limited knowledge. Nevertheless, it is an essential research strategy for effective public policy analysis institutions.

#### INSTITUTIONS FOR PUBLIC POLICY ANALYSIS

Now that the six conditions for effective public policy analysis have been described, attention can turn to the kind of institution in which such research might best be carried out. There are four alternatives: government, industry, universities, and independent non-profit organizations.

### Government

Many government agencies have already developed their own policy analysis activities. Perhaps the most prominent among them is the Office of the Assistant Secretary of Defense for Systems Analysis, which was begun during the tenure of Secretary McNamara. These agencies have drawn heavily upon the reservoir of techniques and personnel developed at Rand and other independent policy analysis organizations. As techniques of analysis and skilled personnel develop in other areas of governmental activity, such governmental analysis agencies can be expected to become more common. Indeed, a similar phenomenon is now occurring in New York City, where the Housing and Development Administration, after sponsoring a year and a half of research by Rand into New York City's housing problems, has begun to build up its own planning and evaluation unit. And, just as has so often been the case in the federal government, one of the key persons in the new office has been drawn from Rand's staff.

Despite government's growing awareness of the need for its own policy analysis activities, however, there remain several reasons why much policy analysis will always have to be performed by agencies that are outside of government.

The first is that in many government agencies it would be impossible to bring together the critical mass of people needed to provide a proper mix of skills. An agency that can afford three man-years of effort will be limited to the skills of three men if it hires them, but it can draw upon three man-years of effort comprising a broader mix of skills if it sponsors research at an outside agency. Moreover, it is generally difficult for government, especially state and local, to recruit and retain the highly skilled staff professionals necessary for good policy analysis.

The second is that offices within government rarely have the independence and flexibility prerequisite to development of new approaches to policy issues. Too often their role becomes one of simply supporting advocacy of the agency's position in intragovernmental competitions for funds. Too often their scope is restricted by the predispositions and heritages of their own agency.

The third is that government-based analyses almost invariably focus on the immediate, on the decision that must be made now. Analyses are frequently done under time pressures, and a common complaint of the government analysts is that they have insufficient time to think about problems beyond the current crash study.

Thus, government cannot house all public policy analysis activities.

### Industry

The "industry" for policy analysis comprises a growing number of analytical consulting organizations, spawned by defense study contracts, and a variety of conventional management or engineering consulting firms seeking to expand their services. Government ordinarily contracts to receive their advice through competitive bidding on a specified task-order contract. The product of the contract generally is a report that may or may not be implemented.

This method of acquiring policy analytic advice might work well if agencies could expect to identify well-specified tasks, to evaluate the prospective performance of bidders from formal proposal documents, and to implement the consultant's suggestions without further continuing advice. Unfortunately, however, those questions for which agencies need outside advice are just those for which these tasks would be most difficult. The agencies need help in formulating the problem that should be studied, in judging the skills and techniques that should be applied, and in implementing the recommendations. But giving this kind of advice requires an extensive knowledge of the agency and its activities. And acquiring that knowledge requires a continuous, close relationship between policy analyst and agency of the kind that can neither be narrowly specified in a task-order contract, nor achieved through competitive bidding. Moreover, it is the kind of relationship that might raise serious problems of conflict-of-interest or of the public interest, if the policy analysis organization were to be profit-making. Such problems might arise if, for example, the policy analysis organization were to advise the government agency on matters that concerned the expenditure of public funds with other, possibly competitive,

profit-making firms. There is also the potential problem of having one private, profit-making firm in a special relationship with government, privy to and advising on a wide range of public agency business.

For these reasons it seems undesirable to place the major responsibility for public policy analysis on profit-making firms. When there are reasonably well-specified tasks that are expected to lead to implementable results, competitive bidding among industrial firms might be warranted; but for the complex, ambiguous tasks facing many agencies today, non-profit institutions, which can join more closely with government, must be called upon.

#### Universities

One possibility is the university. Among its responsibilities, in addition to teaching and research, is service to the community. Performing public policy analyses would be an excellent way to fulfill those responsibilities. Many faculty members already serve as governmental advisers. Some universities have accepted grants or contracts to work on public policy issues. Faculty economists, sociologists, and engineers have been concerned with social policy questions for many years. Yet, despite these qualifications, government cannot count on the university for the major portion of its policy analysis assistance.

Universities are generally not equipped to undertake long-term operational activities. While faculty, staff, and graduate students are anxious to perform studies that meet their research and training interests, they are correctly loath to accept the complete responsibility for performing day-to-day chores. There is no more propriety in the university faculty conducting most government policy analyses than there would be in the business school faculty providing most management consulting, the engineering faculty carrying out most design tasks in industry, or the medical school faculty meeting most health care needs. The university will properly undertake policy analysis tasks when they are part of a training or research program or when the university offers some special competence, but it cannot appropriately undertake the bulk of such analyses, which may not satisfy either of these conditions.

There are other reasons for the university not to enter into major policy analysis arrangements with government. Staffing would be a problem. Policy analysis demands not only faculty and graduate students, but full-time, operationally oriented, professional staff without faculty positions. At most universities such non-faculty professional staff feel like second-class citizens. They do not ordinarily have the routes for promotion that faculty possess. When separate institutions, such as the Instrumentation Laboratory at MIT, are set up to house them, the problem can be solved, but the resultant institution is no longer a university, except in tenuous association.

A related problem is the one of incentives. University promotion is ordinarily based on academic achievement as measured by publications in the respected professional literature. As has been mentioned earlier, the results of policy analyses may not be publishable, or if publishable may be appropriate for journals read by government officials and not by academics, or may be the inseparable product of a large interdisciplinary team. Moreover, the techniques appropriate to achieve useful policy results may be rougher and less formal than those prominent in the academic literature. Thus, the university--as a university--is in a poor position to properly motivate its faculty for policy analysis work.

The final difficulty the university faces is that of providing continuity. The need for such continuity in order to develop knowledge, trust, and influence was noted earlier. Yet the flux of young faculty and graduate students is so high at most universities that the chance of maintaining continuity is quite low. Moreover, that flux means that government agencies must be willing to meet and learn to work with a new generation of policy analysts each academic year.

Thus, while the university has a proper and growing role in training and research for policy analysis, the burden of operational policy analysis must fall to another category of non-profit social institution--the independent public policy analysis organization.

#### Independent Public Policy Analysis Organizations

The several deficiencies of government, industry, and universities as public policy analysis organizations have led to the establishment

during the last quarter-century of a number of independent, non-profit organizations to work closely with government. These institutions, represented by The Rand Corporation, the Institute for Defense Analyses, and the Urban Institute, are the prototypes for what should be a growing number of such organizations, established to work with all levels of government. Although most of them were established pragmatically, to meet perceived needs for assistance in some area of government concern, it is now possible to see that their invention fulfilled a more general need and has a greater social consequence. Because they provide a unique mechanism for bringing highly competent analytic assistance to government agencies facing complex policy issues, the independent public policy analysis organizations are a major social invention.

The six essential characteristics of effective policy analysis institutions can be achieved by such organizations.

They are policy-oriented by design. To an extent unmatched by industry or the universities, the incentive structure of these organizations is designed to encourage and reward work according to its relevance to policy-makers. As non-profit organizations, the institution's objectives can be preeminently the public interest, with no chance of offending stockholders or special interest groups of constituents, students, faculty, or alumni. Management can devote its primary efforts to achieving policy-relevant research through appropriate staffing, working conditions, client relationships, and rewards.

They can aspire to the proper balance between influence and independence. Since they are subject neither to the potential conflict-of-interest of industry, nor to the heavy staff flux of the universities, these institutions can enter into the long-term, close relationships with government from which knowledge, trust, and--eventually--influence come. But since they are not part of government, they can examine alternatives and face issues that bureaucratic or political constraints might proscribe within government.

They can seek and benefit from a broad charter. Because of their fundamental policy-orientation and their ability to enter into continuous relationships with government, these institutions can acquire the knowledge and judgment necessary to define relevant research topics within

their broad charter. Because of their need to establish a relationship of trust with government, they are motivated to employ their breadth of charter in the interest of effective public policy and not, for example, primarily in the interest of academic research or corporate profit. And, reciprocally, the relationship of trust with government is what is needed to sustain the breadth of charter through time.

They can provide the environment for interdisciplinary research. The principal requirement here is the establishment of an administrative structure and incentive system that attracts first-class discipline specialists from a wide range of disciplines and then facilitates and rewards their work in teams on issues of public policy. While no one of the independent public policy analysis organizations is satisfied with its ability to achieve effective interdisciplinary research, it is generally acknowledged that they have done far better than any other class of organization--government, industry, or the universities.

The same is true for futures-oriented research. While the interest in such research has spread into industry, parts of government, and some universities, its effectiveness when applied to public policy issues depends heavily on the ability to employ interdisciplinary teams. The advantages of independent public policy analysis organizations in interdisciplinary research carry over, therefore, to futures-oriented research.

And when it comes to application of the systems approach to public policy issues, precisely the same argument applies. The systems approach to public problems demands interdisciplinary teams, a broad charter, and policy orientation. As a consequence, independent public policy analysis organizations are ideally suited for carrying out such research.

The Rand Corporation has, in the course of its twenty-year history, been credited with many innovations in the substance and methodology of public policy analysis. It is closely associated with interdisciplinary research, futures research, and the system approach. It has frequently been honored by the call for the establishment of a "Rand-like" organization to work on one or another major public issue. Attempts have been made to set up Rand-like organizations in several other countries. This paper has attempted to show that Rand's success has been based on its

fundamental character as an independent public policy analysis organization and that it is a model worth emulating. In this time of complex and changing social issues, a central problem of society is raising the ability of government to deal with change and complexity. The invention of the independent public policy analysis organization was an important step in that direction. The widespread employment of such institutions at all levels of government will make a major improvement in society's ability to solve its problems.